

IN THE CLAIMS:

**1. (Currently Amended)** A network arrangement comprising nodes and optical links interconnecting the nodes, characterized in that at least one node comprises:

a transceiver pool that includes a plurality of at least two transceivers with corresponding customer-side (CS) connection points and at least two optical director-side (ODS) connection points that are each adapted to output an optical signal at a particular wavelength that is specified by an electrical control signal applied to said transceiver pool; and

an optical director element having bi-directional local input ports, each connected to a different one of said ODS connection points, and at least two other ports, with said director element adapted to add a signal applied to one of said local input ports by a connected ODS connection point, which is at said particular wavelength, to a specific one of the other ports, via all optical paths, pursuant to a control signal applied to the optical director element, without affecting signals of other wavelengths that are applied by the optical director element to said specific one of the other ports.

**2. (Original)** The network of claim 1 where each of said links interconnects a pair of nodes and comprise a series connection of at least one optical cable that contains at least one optical fiber.

**3. (Previously Presented)** The network of claim 1 where said control signal that affects the transceiver pool and said control signal that affects the optical director element are unrelated to any network fault indication.

**4. (Original)** The network of claim 1 where the number of said CS connection points is equal to number of said ODS connection points.

**5. (Original)** The network of claim 1 where each transceiver in said transceiver pool is adapted to deliver to said CS connection points an optical signal that is suitable for long-reach optical transmission.

**6. (Original)** The network of claim 1 where each transceiver in said transceiver pool is connected to one of said CS connection points, and to one of said ODS connection points.

**7. (Previously Presented)** The network of claim 1 further comprising a service layer device that is interposed between customer signals and the CS connection points.

**8. (Original)** The network of claim 1 where said transceiver pool is part of a service layer device.

**9. (Original)** The network of claim 8 where said service layer device performs a routing, or a multiplexing function.

**10. (Original)** The transceiver pool of claim 1 where a transceiver element in said pool is adapted to transfer information contained in a signal at a CS connection point to a signal of a particular wavelength at an ODS connection point.

**11. (Original)** The transceiver element of claim 10 where the signal at its associated CS connection point is electrical.

**12. (Original)** The transceiver element of claim 10 where the signal at its associated CS connection point is optical.

**13. (Previously Presented)** The network of claim 1 where a transceiver element in said pool is adapted to transfer information to a CS connection point that is contained in a signal of a particular wavelength appearing at one of said local input ports.

**14. (Original)** The transceiver of claim 13 where the signal at the CS connection point is electrical.

**15. (Previously Presented)** The network of claim 1 where said optical director comprises

a switch connected to local input ports; and

an optical routing element connected to said switch and to said other ports.

**16. (Original)** The network of claim 1 further comprising a management network for communicating said control signals.

**17. (Original)** The network of claim 16 where the management network is distinct from said network.

**18. (Original)** The network of claim 1 further including in-band control signals that flow through said network to provision nodes of said network.

**19. (Original)** The network of claim 1 further including out-of-band control signals that flow through said network to provision nodes of said network.

**20. (Original)** The network of claim 1 where said transceiver pool is embedded in said optical director.

**21. (Previously Presented)** A method for provisioning capacity in a network where nodes are interconnected with optical links comprising the steps of:

at a first node of said nodes

receiving control signals;

responsive to said control signals, tuning a first transceiver pool to deliver an information-bearing signal at one of N optical Director Side (OSD) connection points associated with said first transceiver pool (local ports), where N is a non-zero integer greater than one, and to accept an information-bearing signal from said corresponding ODS connection point, where said information-bearing signal that is delivered by said first transceiver pool is at a wavelength specified by said control signals, and information in said information-bearing signal delivered by said transceiver pool is substantially the

same as information provided to said transceiver pool from a Customer Side (CS) connection point; and

responsive to said control signals, directing a first optical director having at least  $N+2$  ports, with  $N$  ports associated with said  $N$  ODS connection points associated with said first transceiver pool, and remaining ports being coupled to selected ones of said optical links (long-reach ports), to route signals arriving at said  $N$  ODS connection points to specific ports of said first optical director.

**22. (Original)** The method of claim 21 where said signal delivered by said transceiver pool is adapted for long-reach transmission.

**23. (Original)** The method of claim 21 where said directing of routing to specific ports of said optical director is limited to routing to said long-reach ports.

**24. (Previously Presented)** The method of claim 21 where said control signals are unrelated to a failure indication.

**25. (Original)** The method of claim 21 further comprising the steps of:  
at another node of said network,  
receiving control signals;  
responsive to said control signals, directing a second optical director that has  $M$  ODS connection points and at least 2 ports, where  $M$  is a non-zero integer, to route signals arriving at one of said ports to one of said  $M$  ODS connection points, as specified by said control signals; and  
responsive to said control signals, tuning a second transceiver pool to accept an information-bearing signal at one of said  $M$  ODS connection points for delivery to one of a plurality of CS connection points associated with said second transceiver pool.

**26. (Previously Presented)** A method for controlling a network that includes nodes, and links that interconnect the nodes, where a first node of the nodes executes a process comprising the steps of:

provisioning a tunable transceiver of said first node to communicate substantially all of the information of an applied customer signal to a first local connection point that is coupled to a first controllable optical director of said first node, which information is modulated onto a wavelength specified by a control signal applied to said tunable transceiver, which control signal is other than indicative of a failure condition; and

provisioning said first controllable optical director to transfer signals at said first local connection point that have said specified wavelength to a port of said first controllable optical director that is specified by a control signal applied to said first optical director, said transfer being via essentially all-optical communication paths within said first controllable optical director.

**27. (Original)** The method of claim 26 where the communication paths of the optical director are all-optical.

**28. (Original)** The method of claim 26 where the port selected for said controllable optical director is connected to a link that is coupled to a port of a second node of said nodes, where said second node executes a process comprising the steps of:

provisioning a second controllable optical director to transfer signals that appear at said port of said second node and have said wavelength to a local connection point of said second node, said transfer being effected via essentially all-optical paths in said second controllable director; and

provisioning a tunable transceiver of said second node to form an output signal from a signal that appears at said local connection point of said second node and at said wavelength.

**29. (Original)** The method of claim 28 where the second controllable optical director transfers signals via an all-optical path.

**30. (Original)** The method of claim 26 where the control signals are applied to said first node in response to a request for provisioning.

**31. (Original)** The method of claim **30** where the request is initiated by an element of the node.

**32. (Original)** The method of claim **30** where the request is initiated by a customer.

**33. (Original)** The method of claim **30** where the request arrives from another node.

**34. (Original)** The method of claim **30** where the request arrives from an administrator that has direct control over provisioning of the node.

**35. (Original)** The method of claim **30** where the request arrives from an entity that has management control over the network.

**36. (Original)** The method of claim **35** where the request arrives from said entity pursuant to a process that rearranges provisioning in said network.

**37. (Original)** The method of claim **35** where the rearranging of provisioning is in response to a request by a customer to provide a modified capacity allocation.

**38. (Original)** The method of claim **35** where the rearranging of provisioning is in response to changes in network load conditions.

**39. (Original)** The method of claim **38** where the changes in network load conditions arise from network faults.

**40. (Original)** The method of claim **26** where the control signals are applied in response to a fault condition detected in the network.

**41. (Currently Amended)** A method for controlling a network that includes nodes, and links that interconnect the nodes, where a node of said nodes, which comprises a traffic element that includes a tunable transceiver that is coupled to at least one a local port A and a local port B of a controllable optical director that includes at least two non-local ports, executes a process comprising the steps of:

provisioning in regards to wavelength said controllable optical director to transfer signals of wavelength X that arrive at a first of said non-local ports, to local port A of said local ports,

provisioning in regards to wavelength said controllable optical director to transfer signals of wavelength Y from local port B of said local ports to a second of said non-local ports;

provisioning in regards to wavelength said tunable transceiver to regenerate information contained in signals of wavelength X that arrive at said local port A; and

provisioning in regards to wavelength said tunable transceiver to regenerate information contained in signals of wavelength X that arrive at said local port B.

**42. (Original)** The method of claim **41** where wavelength X and wavelength Y are one and the same wavelength.

**43. (Original)** The method of claim **41** where wavelength X and wavelength Y are different from each other.

**44. (Original)** The method of claim **43** where said local port A and said local port B are one and the same local port.

**45. (Original)** The method of claim **41** where said local port A and said local port B are different from each other.